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Forbes

FOOD SUPPLY
WILL HELP FROM SCIENCE COME IN TIME?

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Forbes

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Volume 127, Number 5

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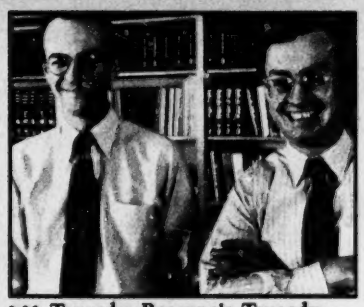

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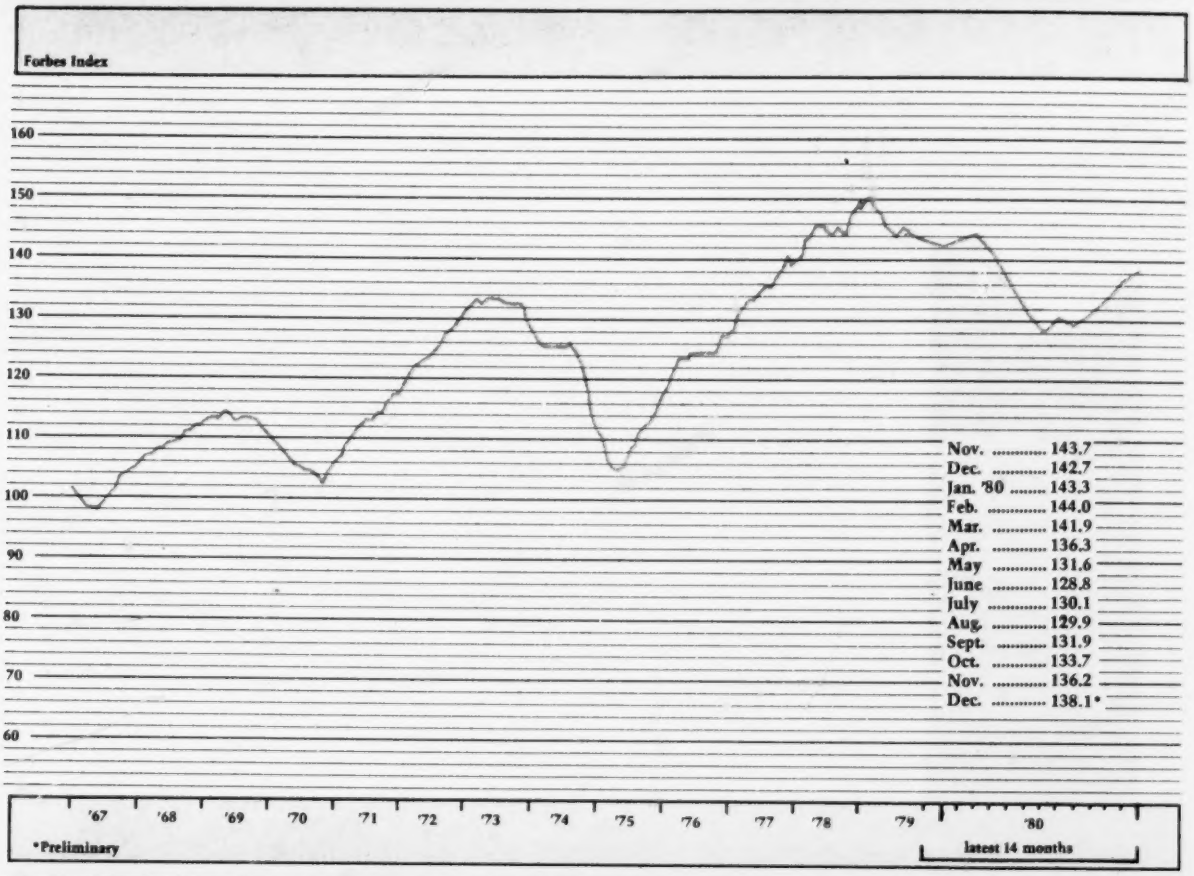
The Forbes Index



The Forbes Index Components

Those businessmen who want an economic slump to help fight inflation get no good news from the FORBES Index. It is still moving upward. Components that posted the strongest current showing are unemployment claims, which continued their recent decline, and new orders for manufactured goods. The latter are expanding at a healthy rate, and the ratio of orders to inventories is rising, too—another sign of optimism.

The FORBES Index is a measure of U.S. economic activity composed of eight equally weighted elements:

Total industrial production

New claims for unemployment compensation

The cost of services relative to all consumer prices

The level of new orders for durable goods compared with manufacturers' inventories

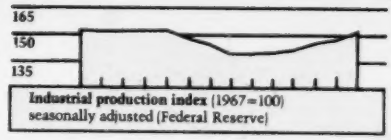
Total retail sales

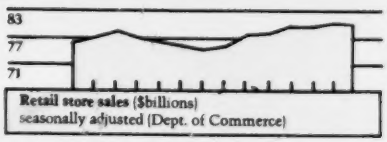
New housing starts

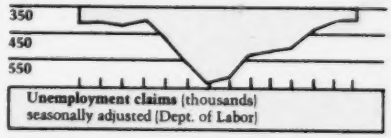
Personal income

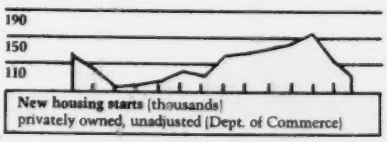
The change in the amount of consumer installment debt outstanding

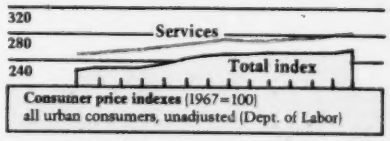
To measure these eight elements, FORBES monitors 11 series of U.S. government data. The last 14 months' data for each series is presented at right.

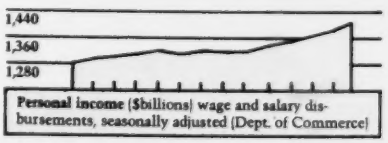


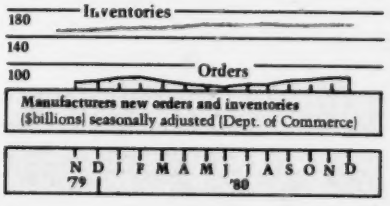


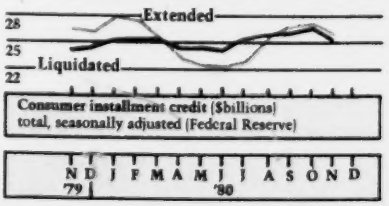












Help from science could avert a food crisis if it comes in time. The hope is for breakthroughs from universities and business.

The growth industry

By Bob Tamarkin

AMID ALL THE UNRELIEVED bad news about food supplies—diminishing gains in productivity, protein shortages, birthrates that won't quit, prospects of soaring food prices—amid all that, there is good news, too. It comes from what is going on in agricultural research, most importantly in the laboratories of American universities and of major U.S. companies positioning themselves for a great growth market.

The news, often couched in arcane scientific language, carries the promise of virtually limitless horizons in food production. The promise may be agonizingly slow to pay off; it's a business where 1990 seems like tomorrow. And the breakthroughs may not come in time to avert spreading world food problems. But it's the best hope we've got.

For the last 40 years, America, and through our bounty the world, has been living in an agricultural golden age. Every new development of technique in farming increased the soil's yield. But now there are ominous signs. "Yields are increasing at decreasing rates," says Director Norman Berg of the Department of Agriculture's soil conservation service. "Our technology may have reached the point of diminishing returns."

What Berg observes from Washington, farmers like Bill Goodner of Broken Bow, Nebr. and Dennis Mikkelson of Mankato, Minn. experience on their farms. Planting fence post to fence post, Goodner now gets 145 bushels of corn per acre, where his father got only 45 in the years after World War II. But Goodner must pour more water and fertilizer on those fields every year just to maintain his high yields. Mikkelson reports that yields have been flat for the past five years where once they grew 5% a year. "We've sort of run into a barrier," he shrugs.

The very land itself is diminishing. The U.S. farms some 413 million acres today but loses more than 3 million acres a year to a combination of urbanization and soil erosion. On erosion, a new report from USDA only confirms the impression of West Branch, Iowa farmer Lyle Waters, who says, "In Iowa, we lost more tons of soil last year than during the Dust Bowl."

Such prospects are ominous for the U.S. and the world. At home, we'll have enough to eat but costs and prices will keep rising annually. Many of those fertilizers—mainly anhydrous ammonia—herbicides and pesticides that have given farmers today's bounty are energy based. Pushed by energy costs, food prices are rising faster than ever—5.5% a year a decade ago, an estimated 14% this year.

The signs are even more ominous for a hungry world that expects the U.S.—which last year exported 170 million tons of food, *vs.* 6 million ten years ago—to send it more food in years to come. "Soybeans and feed grains would have to increase from 150 million metric tons a year to 500 million by the year 2000 if the world is to keep eating meat," says Ralph Hardy, head of agricultural research for E.I. Du Pont de Nemours & Co.

The prospect is stark: Unless U.S. agriculture can renew its traditional ability to increase productivity, the world could be facing again the old Malthusian equation of too few proteins for too many mouths.

Enter hope. American agriculture has always had strength in reserve—the great research laboratories of our land-grant universities, of farm-minded chemical, drug and seed companies and the support for research from the USDA. The laboratories are working on ways to produce more food with less energy on smaller areas of land. They are focusing on genetic engineering and on advances in plant chemistry. And the progress reports from the research battlefront are heartening indeed.

In the near term the scientists envision substantial production gains from improving a plant's ability to take in nitrogen, an element which is essential for growth, protein and high yields.

Near term from the chemical side will come plant regulants that can speed up crop growth. Already in use by major corporations is the science of hydroponics, the growing of crops without soil.

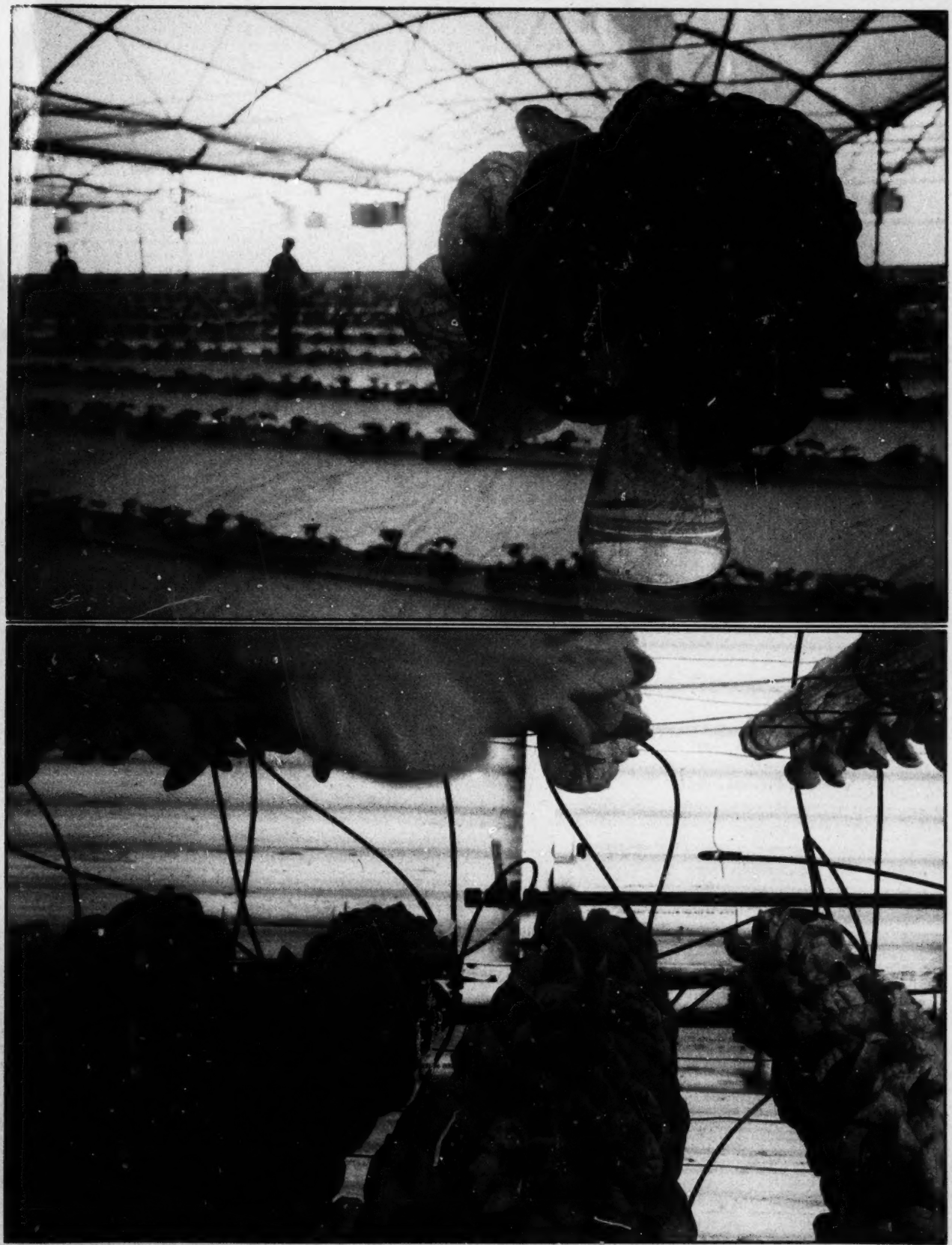
But the most dramatic vision of a new agriculture comes from the promise of genetic engineering to grow one plant from the single cell of another. Through single-cell regeneration it will be possible to isolate the special hereditary qualities that give a plant resistance to disease or the ability to withstand heat, or to go long stretches without water. The scientific name for this newest, most awesome of mankind's abilities is recombinant DNA (for deoxyribonucleic acid, the inherited program dictating the characteristics of all life, human, animal or vegetable). The popular word is cloning.

"There is a sense in academe and in industry that there's a Nobel prize waiting for the guy who actually employs recombinant DNA techniques to increase crop production," says John Senger, general manager of Monsanto Corp.'s agricultural technology division.

Sure, more attention has been paid to the biomedical aspects of gene manipulation. Not that plant genes are more complicated than human ones. Simply, more money is available for biomedical research. Yet genetic breakthroughs in agriculture could well precede gains in medicine.

Genetics not only yields crop increases, it gains time. Nobel peace prize-winner Norman Borlaug took 20 years using crossbreeding techniques to develop the resistant strains of rice and wheat that produced the Green Revolution in India and Pakistan. Genetic engineers would cut those decades to a matter of months if they could master the art of separating and perpetuating healthy genetic characteristics. And the work has begun.

Mary-Dell Chilton at Washington Uni-



Lettuce growing in plastic troughs filled with water and nutrients at Whittaker Corp.'s 1.8 acre greenhouse in Somis, Calif.
Hydroponics can grow 3 million heads of lettuce indoors where 30,000 would have grown outdoors in a tilled field.

Corn

Corn is the world's main feed crop. Cloning could help to bring about a dramatic improvement in yields.

versity in St. Louis is trying to insert the soybean's protein-forming gene into tobacco, the most common laboratory research plant. If it works, the gene-transfer techniques could be applied to food plants.

Researchers at the University of California at Davis are concentrating on improving photosynthesis, the process by which plants convert the energy in sunlight into plant sugars. If the process could be made more efficient, plants would grow faster. Plants now convert only 1% of the energy absorbed. At 2%, a plant would double its rate of growth, resulting in a massive increase in food production.

Stanford University's Ronald W. Davis is researching ways to alter corn's protein-storage genes to make that $50 billion crop more nutritious. At Kansas State University, plant pathologist James Shepherd is cloning potato plants resistant to blight.

At the University of Minnesota, professor of plant genetics Charles Green has grown plants from cells removed from corn plant embryos. So far he and colleague Burle Gengenbach have isolated a strain resistant to the southern corn leaf blight that destroyed some 15% of the U.S. corn crop of 1970. "If progress is as fast in the next five years as in the past five," he says, "chances are there will be applications." That means the biogenetic techniques can come out of the laboratory and start the equally long process of demonstration and product development that leads eventually to the farmers of the U.S. and the world.

Roland M. Hendrickson, president of Pfizer Corp.'s agricultural division, puts an estimate on the time period needed. "We've been at this single cell thing for four years now," he says, "but we're not doing anything that can quickly be applied commercially. We're looking 10 to 15 years down the road."

Because they are doing the research now, it is likely that major chemical and drug companies will be prominent in the agriculture of the future. The drug companies come to genetics from both the pharmaceutical and agricultural sides, where they are active in veterinary medicine. The chemical companies are the traditional developers of herbicides, pesticides and fertilizers. The promise of genetics, long term, is to displace those products. So, now Dow Chemical, Monsanto, Du Pont and Stauffer are among those devoting money to far-out genetic research, as both defensive and offensive long-term business strategies.

Agricultural research expenditures at the big firms have been growing in the last decade and are now reaching significant size—around 20% of total R&D for most, 36% of total for Eli Lilly & Co. "We're building a broad-based recombinant DNA capability, which includes agriculture," says a spokesman for Lilly.

"We are trying to find some leads into markets that would be important to us five to ten years out, such as nutrition and photosynthesis," says Sam Vranish, agricultural research director for Dow. "We have a lot of faith in agriculture as a growth area for Dow—just like pharmaceuticals."

But corporations, and university laboratories, do not live by the long term alone. The near-term promise of genetic engineering is in nitrogen-fixing.

The problem is simple enough. The solution has scientists agonizing. To make protein, plants need nitrogen, but they can produce it neither from air nor from soil. Bacteria that grow on the roots of leguminous plants—beans, peas, alfalfa, clover—take nitrogen and combine it with oxygen and other substances to produce nitrates, which nourish plants. Traditionally, the bacteria have been augmented by nitrogen fertilizers, but the process eventually weakens the natural bacteria. That meant a need for more fertilizers and more expense.

By using genetics, researchers hope to "infect" the plants—such as 35% pure protein soybean, which builds up the food value of animals—with superior bacteria. Some scientists believe soybean yields could improve immediately by 15% through use of this technique. Progress would yield a double benefit: growth in the $10 billion annual soybean crop and savings on the $2 billion annual nitrogen fertilizer bill.

Raymond C. Valentine, who heads a team of 15 scientists at the University of California at Davis, believes work in nitrogen-fixing is closer to fruition than anything else in plant research. Says bacteriologist Winston Brill, whose research team has devoted 12 years solely to nitrogen-fixation at the University of Wisconsin: "We've had a major breakthrough every couple of months for the past two years." And Du Pont has spent 20 years on nitrogen-fixation research. Dow, Monsanto and Allied Chemical are also concentrating on this promising tool. The researchers hope someday to make the major grain crops, corn and wheat, independent of fertilizers for their nitrogen.

The other near-term technological hope for agriculture, says Du Pont's Hardy, is plant-growth regulants, through which the scientists can selectively modify crops—increase the sugar content of cane or beet, for example. Selective modification, says Hardy, is much more difficult than "the kill/no kill selectivity of pesticides and herbicides."

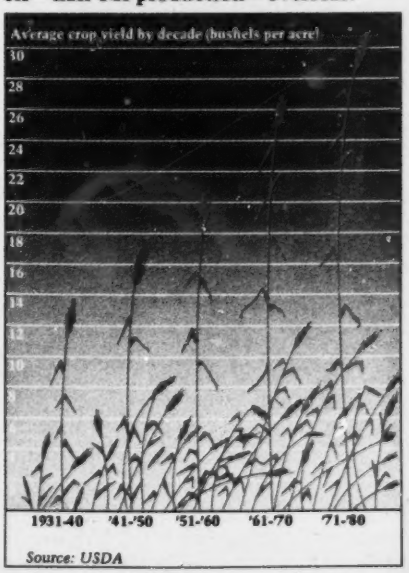
Plant regulants—chemical-like hormones that alter a plant's growth and quality—are an advance of chemical technology so promising as to open a new field.

Union Carbide's regulant, Ethrel, increases yields in walnuts and turns tomatoes and apples redder. For the past ten years, Du Pont's researchers have been working on a regulant that would effectively limit a soybean's intake of growth-inhibiting oxygen. In one test, a soybean plot was flooded with carbon dioxide. The result, notes Hardy, was a doubling of yield.

Monsanto, which gets 42% of its $800

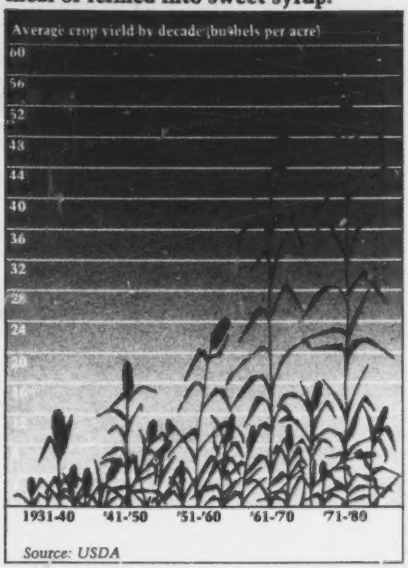
Wheat

Wheat is America's main export crop. This year, we will send 1.5 billion bushels—half our production—overseas.



Sorghum

Sorghum, a cereal grass, is used mainly as feed, but it can also be ground into meal or refined into sweet syrup.



million net income from agricultural products, has a plant regulant on the market, called Polaris, which has already increased Hawaiian sugar cane yields by 10% to 15%. Monsanto is ahead in plant regulants because of a happy accident. The company had a herbicide formula sitting on the shelf in 1976, when one of its scientists ran across an article describing the properties of plant regulants. They were almost identical to those of the herbicide, which was immediately modified and brought into current development. "They're the next major wave of agricultural chemicals and we're heavily committed," says the company's John Senger.

But the most spectacular current breakthrough in chemical technology is already commercial. It's called hydroponics, which basically means growing plants in water instead of soil. Essential nutrients are added to the water and the plants are grown in a controlled environment. Whittaker Corp., of Los Angeles, Calif., Control Data Corp. and General Mills, both of Minneapolis, are already producing lettuce in "vegetable factories." "We grow plants like the East Germans grow athletes, in a very regulated environment," boasts Steven K. Eisenberg, president of Whittaker's Agri-Systems division. Inside a 1.8 acre plastic greenhouse in Somis, Calif., Whittaker is raising lettuce, cucumbers and tomatoes for the $650 million salad-greens market. The expected yield: 3 million heads of lettuce per year, compared with a 30,000-head yield when lettuce is grown in soil.

Control Data is now harvesting 10,000 heads of lettuce a week in an old Minneapolis warehouse using hydroponic technology purchased from General Electric last October. "We can produce it where it is consumed," says Phillip J. Bifulk, a CDC vice president. "Shipping produce from the Sunbelt to the frostbelt only made sense when gas was 29 cents a gallon."

West of Chicago on the outskirts of De Kalb, Ill., General Mills' 5,000-square-foot artificially lighted vegetable factory is growing spinach, Bibb, leaf and Boston lettuce. All three companies plan to franchise their systems to other growers both in the U.S. and abroad.

But chemistry aside, we wouldn't have hydroponics were it not for the electronic control component in these special greenhouses. It is only one of a number of ways that advances in data processing are aiding agriculture. There are computer programs that allow a farmer to select the best animal nutrition at the lowest price. There are some 60 feed companies, dairies and consultants—each representing several hundred farmers—tied into the University of California's farm computer. A cow's vital statistics—such as sex, weight and milk output—are fed into the computer, which then recommends a feed formula. In the past three years, say university officials, the program has increased average animal milk production 40%, to 20,371 pounds per animal. There is electronic entrepreneur, Missourian Marvin Marshall, who tours the dairylands of Illinois, Indiana, Michigan and Ohio in a Ford Econoline loaded with IBM equipment. In two hours he will analyze a farmer's dairy cows and whip up a feed formula.

Not all advances are through revolutionary technology. There is some opportunity for further progress in the traditional areas of selective breeding and seed hybridization, while we wait for the promise of bioengineering. The successes in poultry are already well known. Through selective breeding, higher protein diets and artificial lighting methods, hen houses have been turned into egg factories. In 1924 the average commercial hen laid 112 eggs a year. This year the average will be 250 eggs and through 1985, says James Warren, of DEKALB AgResearch Inc., we can expect at least a two-to-three-egg increase each year. University of Missouri Professor Harold Biellier has developed a prolific layer that produces 448 eggs in as many days.

Less well known is that the cattle industry has found a way to multiply prize stock. Using embryo transplants, a high milk producer can become the mother cow for an entire herd. After artificial insemination induces pregnancy, the embryo is transplanted into an ordinary cow. The resulting calf has the quality characteristics of the blood mother rather than the bearing mother, which can bear repeatedly. One cow at the University of California at Davis conceived a record 11 calves a year. Embryo transplanting is now a $20 million industry, but researchers say that in another few years nearly all animal breeding will be done in this manner—and not only in the U.S. The embryos are already being frozen and shipped to other parts of the world to produce prime stock.

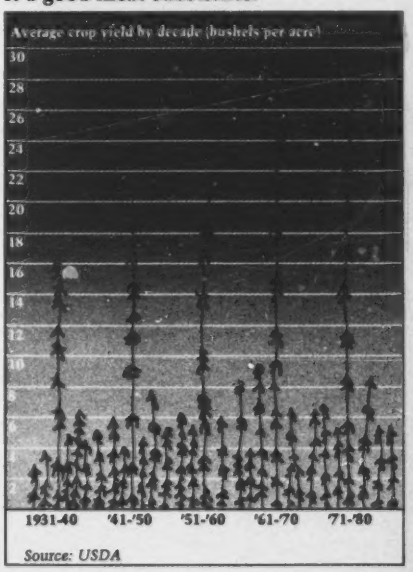
In hybridization, the great successes with corn long ago increased yields dramatically. From here on, says Professor John Pesek, head of the agronomy department at Iowa State University, farmers may still get 1.5 bushels more per acre per year. But the focus of the two giants of the $1 billion corn-seed market—DEKALB AgResearch and Pioneer Hi-Bred International—has shifted to attempts to create hybrid seeds for wheat and soybeans. Anticipated near-term payoff: a 20% increase in wheat yields. Such a surge would add 400 million bushels a year to our wheat crop, allowing a 20% increase in wheat exports.

And DEKALB is taking account of the U.S.' worsening—meaning more arid—weather patterns of recent years and is testing a corn hybrid in the desert heat of Yuma, Colo. That hybrid, derived from a Mexican strain, can grow three weeks without water.

DEKALB and Pioneer are the traditional research leaders, but they must be looking over their shoulders at the roster of well-heeled industrial newcomers to agriculture. Not only the drug and chemical companies, but newcomers like Shell, Atlantic Richfield, Occidental Petroleum

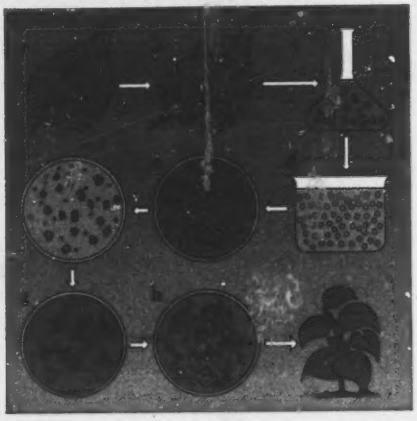
Soybeans

Soybeans is the highest-protein crop—35% pure—and is cheap to grow, making it a good meat substitute.



Chip off the old block

Cloning sidesteps the genetic uncertainties of sexual reproduction by carbon-copying a single parent. The potato-plant leaf (a) is chopped (b) and placed in a hormone solution (c) that stimulates cell growth. The pieces are moved to an enzyme solution (d) that dissolves cell walls—leaving protoplasts. A hormone solution (e) makes the protoplasts divide, with each new one an exact replica of the one before. Protoplasts then mass together (f) and hormone treatments cause growth of shoots (g) and roots (h). Finally, the cloned plants are planted (i).



and International Telephone & Telegraph, which have entered the field by purchasing seed companies.

There is a corporate scramble today to buy up the hundreds of seed companies in the U.S. Why? Because they possess the agricultural knowledge and at least the beginnings of a team of trained personnel. The seed company provides a base to build on, as Pfizer built Pfizer Genetics division on the base of the Trojan Seed Co., of Minneapolis, which it bought seven years ago. Three years ago Pfizer moved it to St. Louis where today it has 20 Ph.D.s in genetic science on the payroll.

Genetics and agricultural Ph.D.s are as valuable as M.B.A.s these days. Monsanto has 20 on its staff and a contract with Daniel Nathans, a Nobel laureate of Johns Hopkins University. Nobel laureate Joshua Lederberg of Rockefeller University is on Celanese's special scientific advisory board.

And there are a number of entrepreneurial companies making a strong bid for future status in agriculture. Agrigenetics Corp. of Denver, Colo. recently spent more than $70 million acquiring two seed companies from Union Carbide. That gave founder and President David Padwa a total of 12 seed companies, bringing annual sales volume of $75 million to his young company. Padwa uses the seed business cash flow to fund such projects as a planned $800,000 laboratory in Madison, Wis. devoted to tissue culture and recombinant DNA. His company, claims Padwa, is backed by venture capital from Henry Ford and some members of the Rothschild family. Agriculture as a field for venture capital? Padwa is an enthusiast: "It's sort of like investing in drilling equipment in 1971," he says. "Now the world has a food problem. Everyone is nine meals away from murder and these biotechnologies are arriving not a moment too soon."

Other small companies include Advanced Genetics Science Ltd., of Greenwich, Conn. and International Plant Research Institute of San Carlos, Calif. Lawrence Bogorad, a top plant molecular biologist at Harvard, sits on the Advanced Genetics board. Both entrepreneurial outfits are extremely hush-hush about their lines of research. AGS, which has neither a listed telephone number nor address, is said to be cloning a disease-resistant potato, and IPRI is trying to grow crops in salt water.

The big companies have begun to step in with cash, either to help or acquire. Monsanto recently bought a $20 million interest in Biogen N.V., a Swiss genetic engineering outfit, and Dow has invested $5 million in Collaborative Genetics Inc., of Waltham, Mass.

If there is any shadow on all this enthusiasm, it is that both private and public research money for agriculture dwindled over the years of agriculture's very success. The emphasis in federal research shifted to human medicine while the productivity curve of the old farm technologies flattened out and the world's food problems worsened. It will be difficult in a time of belt-tightening to increase the amount of research money going to agriculture but, says Ralph McCracken, former head of USDA's office of science and education, "research investment will have to increase to 4% to 6% in the public sector in order to turn the productivity curve around."

Fortunately, there are signs that the climate is changing. In the Carter Administration, Agriculture Secretary Bob Bergland held the purse strings tight for any projects that threatened to displace farm labor, with a nod of support from Cesar Chavez' United Farm Workers. But the Reagan Administration doesn't think that way. John Block, the new Agriculture Secretary, snaps: "That attitude is counterproductive and we can't afford it."

That sense of urgency from the federal government, coupled with the research going on in universities, big corporations and entrepreneurial companies, is likely to produce the right atmosphere for the breakthroughs needed to avert a world food crisis. And just the right climate, too, for a great growth industry of the Eighties. ■

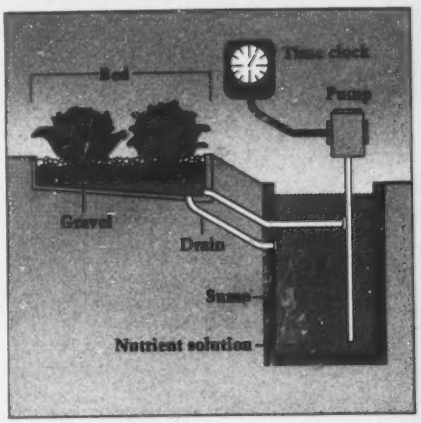
Seed money

Company	Area of long-term agricultural research	Agricultural R&D[1] (millions)	Total R&D[2] (millions)
Allied Chemical	nitrogen fixation	$30	$ 69
American Cyanamid	plant growth regulants	73	124
Dow Chemical	photosynthesis	40	268
Du Pont	nitrogen fixation	42	415
Eli Lilly	recombinant DNA	63	174
Merck	plant genetics	24	188
Monsanto	plant growth regulants	84	173
Pfizer	plant genetics	22	137
Upjohn	soybean hybrids	26	130
Union Carbide	plant growth regulants	46	165

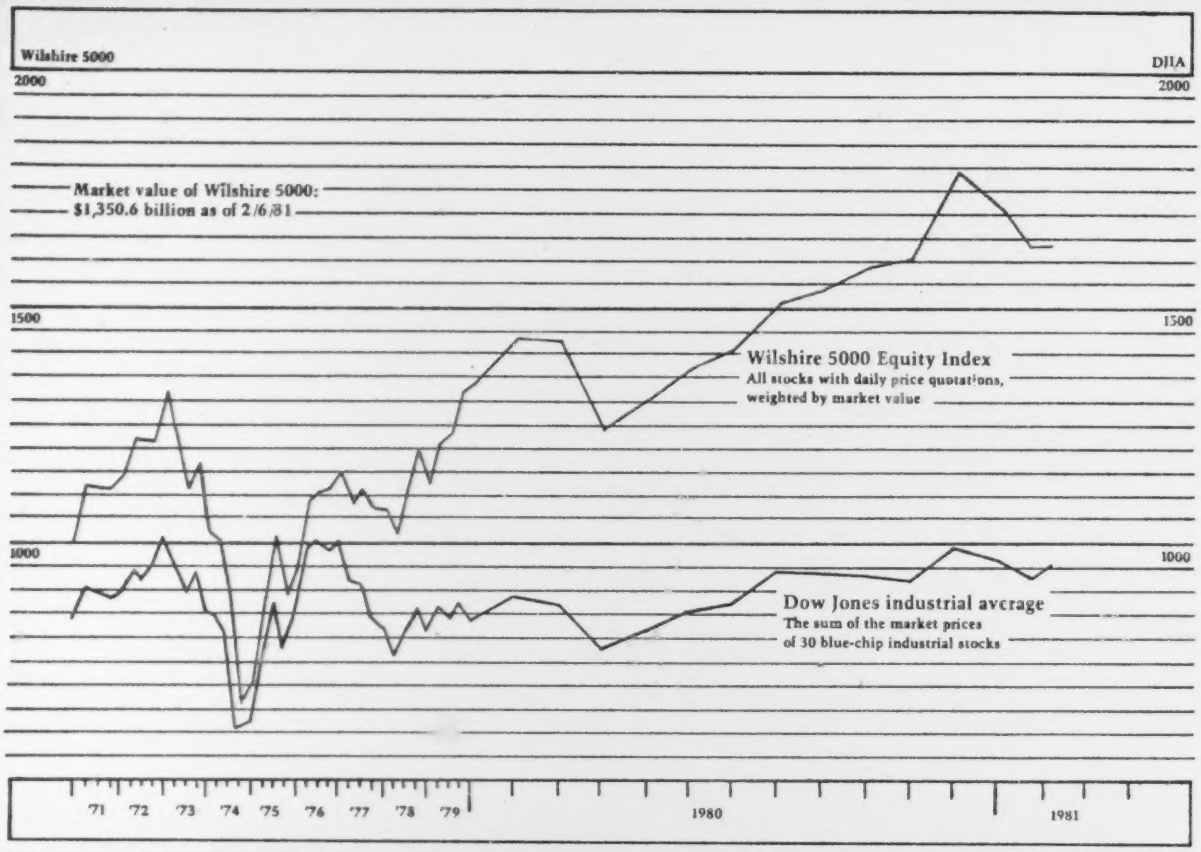
[1]Estimated. [2]Based on latest available figures.

Farms without land

"Hydroponics" is the name for growing plants without soil—most commonly, in water. The main advantage of hydroponics is that it allows closer control over the plant's environment than is usually possible—the timing of "feedings," concentration of nutrients, temperature and humidity. Whatever nutrients the plant needs not found in water are added to make a nutrient solution. In a system like the one illustrated below, the plants are anchored by gravel and the bed is flooded from below; the runoff flows back into the tank to be recirculated.



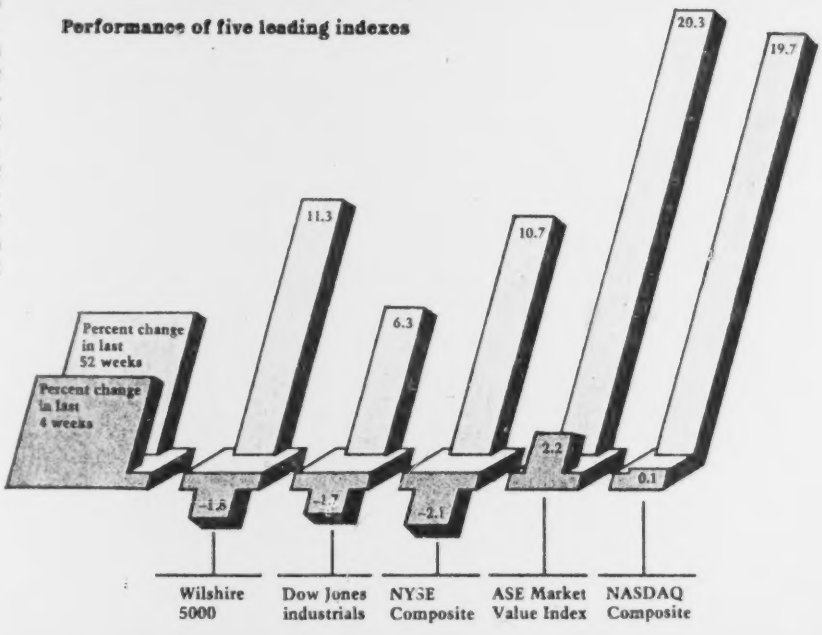
The Forbes/Wilshire 5000 Review



Close-up On The Equity Markets

For a glimmer of hope. compare this chart with the one from our last issue. Then, all the indexes were down sharply, and now the ASE and the NASDAQ have shifted—just barely—into positive territory. What does that mean? Despite the overall declines, investors just won't end their love affair with small companies. That, unfortunately, is hardly good news for the long term. What the market needs most is robust new leadership to set the stage for a real rally.

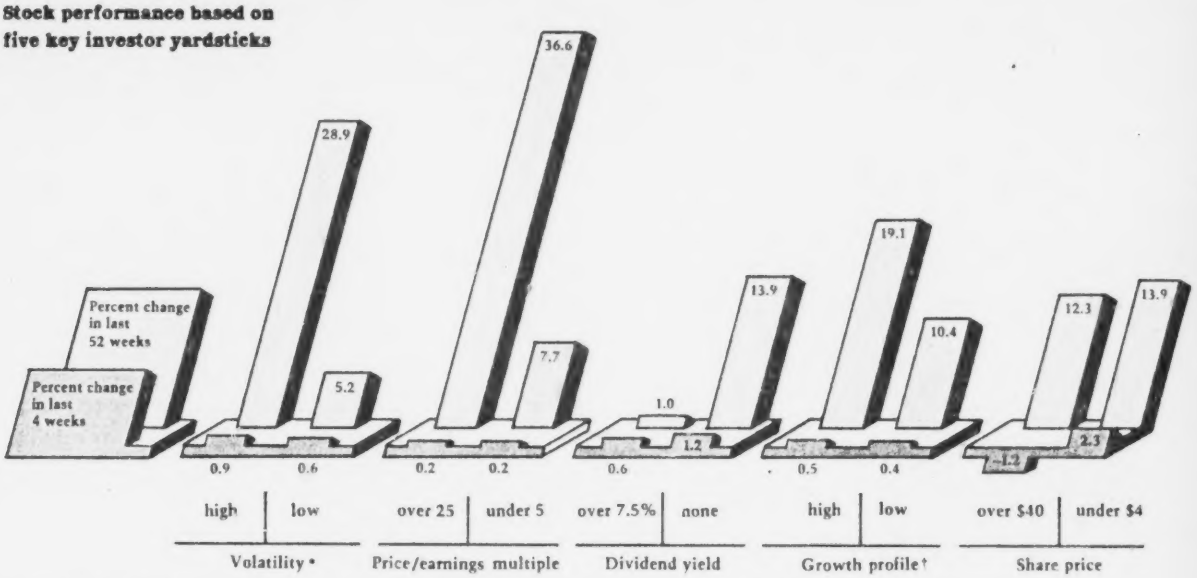
Performance of five leading indexes



Note: All data for periods ending 2/6/81. Prepared by Wilshire Associates, Santa Monica, Calif.

It's clearly a ho-hum market. The four-week results in the foreground of the chart are particularly lackluster because the first few volatile trading days of January have now dropped out of the comparison period. Since then, though the averages have edged down, no sign of any real trend is evident. Share price, in fact, is the only yardstick that investors seem to be at all discriminating about. Expensive stocks have moved down considerably relative to the rise in the value of cheaper shares—yet another sign that the over-the-counter boom is still with us.

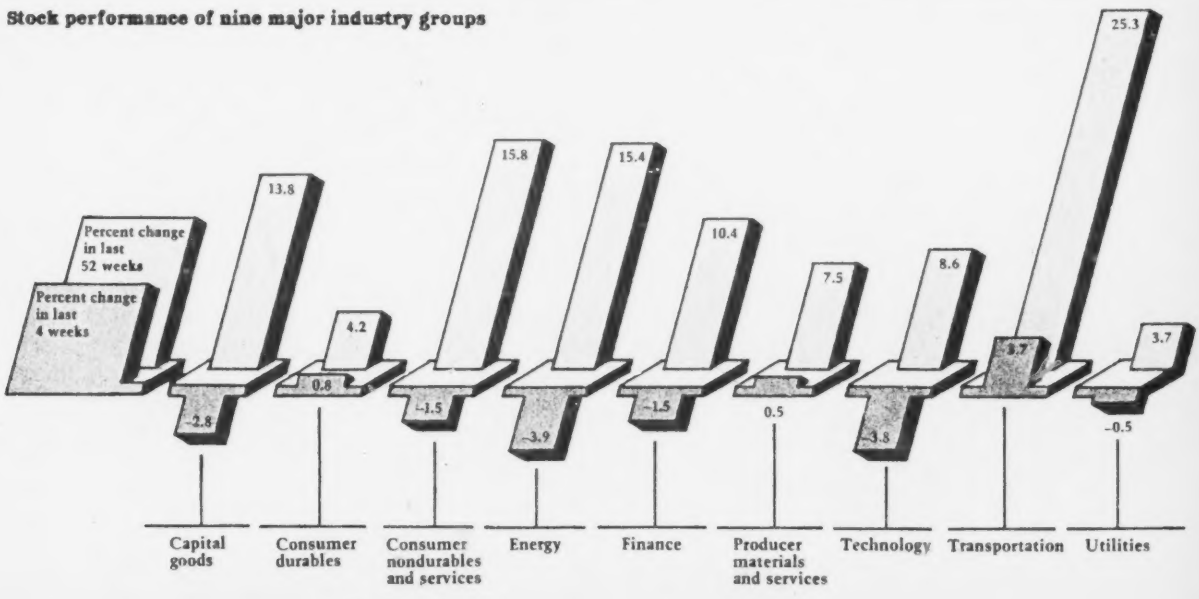
Stock performance based on five key investor yardsticks



* A stock's sensitivity to overall market movement. High volatility issues have wide price fluctuations; low volatility issues are more stable.
† A quantitative evaluation of a stock's growth image, determined by Wilshire Associates.

The energy selloff continues, with technology stocks nearly as unpopular. This is profit-taking, pure and simple. But transportation companies are rebounding nicely—and their strength isn't all due to oil-rich railroads. Some money men think new rate increases will benefit troubled airlines. Still, there is no sign that investors have found new industry groups to lead the market this year. Until that happens, don't expect any major moves.

Stock performance of nine major industry groups



Note: All data for periods ending 2/6/81. Prepared by Wilshire Associates, Santa Monica, Calif.

Statistical Spotlight

In the past few months, textile and apparel companies have generated a lot of interest.

Wheeling and dealing in threads

By Steve Kichen

EVER SINCE THE COLLAPSE of double-knits about a decade ago, textile and apparel companies have been depressed by recession, rapidly changing styles, stiff domestic and foreign competition and rising raw material costs.

Last September FORBES pointed out a select group of undervalued textile and apparel stocks. Although this group outperformed the Dow (9% *vs.* 1%), and a few showed healthy gains—Mount Vernon Mills, up 34%; Salant, 32%—what really drew us back for a second look was the recent flurry of major investments and tender offers.

In January a group of private investors headed by Harold S. Geneen, former chairman of ITT, offered the equivalent of $40 a share for Cannon Mills, which zoomed from 25⅞ to 34; but when Cannon publicly rejected the deal, the stock quickly dropped 7½ points.

White sale

Company[1]	Recent price	Latest 12 months revenues (millions)	Latest 12 months EPS	Interim earnings most recent quarter	Interim earnings one year ago	P/E ratio	Tangible book value per share	Tangible book/ price	Indicated yield	% change in price[2]	Price range 1970-81
Adams-Millis	5¾	$ 77.4	$1.22	$0.17	$0.30	4.7	$10.49	1.82	3.5%	17.9%	19⅜– 1¾
(a) Avondale Mills	17½	307.6	2.98	0.76	0.91	5.9	42.53	2.43	6.9	—	30⅜–13⅜
Belding Heminway	5⅞	120.3	0.78	0.08	0.18	7.5	10.78	1.83	6.1	–6.0	16 – 3⅜
Blue Bell	31¼	1,397.8	5.40	1.68	1.82	5.8	31.98	1.01	5.8	12.6	37⅞– 6
Burlington Inds	19⅞	2,900.6	2.90	0.28	0.65	6.9	39.52	1.99	7.6	–9.1	49¾–13⅜
Cannon Mills	25¾	635.4	3.11	d0.09	0.75	8.3	34.93	1.36	4.7	13.8	35¼– 7⅞
(a) Champion Products	19	108.9	2.78	0.55	0.52	6.8	20.33	1.07	3.8	9.4	30¾– 6⅜
Cluett, Peabody	10⅞	738.6	1.60	0.39	0.65	6.8	20.19	1.86	6.3	17.6	31⅜– 2½
Cone Mills	36⅝	729.9	8.88	1.92	2.10	4.1	49.42	1.35	6.0	–7.6	43½– 6½
(a) Crompton Co	24	153.7	3.65	d0.38	1.39	6.6	47.88	2.00	7.5	–9.0	35¾– 5⅛
Fieldcrest Mills[3]	35¼	521.1	4.73	1.07	1.82	7.5	39.73	1.13	5.7	25.3	41⅞– 6½
(a) Garan	13½	128.5	2.52	0.77	0.51	5.4	16.75	1.24	7.4	21.3	29¾– 4½
Graniteville	12⅜	341.1	2.54	0.57	0.68	4.9	22.62	1.83	8.1	—	17⅜– 5½
Hart Schaffner & Marx	16⅜	674.9	2.63	0.75	0.72	6.2	24.70	1.51	6.1	20.2	33⅛– 4⅞
(a) Jaclyn	5⅛	30.4	0.87	0.26	0.29	5.9	8.34	1.63	7.8	–2.4	9¾– 2½
Leslie Fay	8¼	223.1	1.32	0.82	0.49	6.3	12.11	1.47	5.8	11.9	17⅝– 2¾
Levi Strauss	44¾	2,840.8	5.36	1.46	1.28	8.3	16.50	0.37	3.4	16.6	47½– 3
(a) Mt Vernon Mills	35	126.0	5.87	0.33	1.22	6.0	57.84	1.65	4.3	34.0	35 –10¾
(a) Movie Star	10⅞	42.9	1.14	0.57	1.05	9.5	20.22	1.86	5.5	7.4	20⅝– 3¼
Munsingwear	16¾	144.3	0.35	d0.47	0.38	47.9	29.45	1.76	—	19.6	38¾– 9¾
(a) Olla Industries	9⅞	15.4	2.33	0.23	0.44	4.2	16.41	1.66	4.1	9.7	26⅝– 1¼
Oxford Industries	12⅞	297.3	2.38	0.94	0.52	5.4	23.23	1.80	5.9	–2.8	34 – 7
Palm Beach	18¾	372.5	3.39	1.34	1.32	5.5	14.77	0.79	6.4	–1.3	22½– 2
(a) Pat Fashion Industries	9¾	72.1	3.27	1.24	0.56	3.0	14.00	1.44	1.5	27.9	12 – ½
Riegel Textile	23½	444.3	4.65	0.95	1.03	5.1	34.28	1.46	7.7	13.9	25½– 6⅜
(o) Rospatch Corp	8⅛	55.4	1.40	0.19	0.53	5.8	16.16	1.99	7.4	–1.5	24⅛– 5⅞ [4]
Russ Togs	13¾	188.4	2.44	0.74	0.64	5.6	13.57	0.99	6.4	25.0	23⅞– 5½
Salant	8¾	270.2	1.07	0.44	0.26	8.2	15.88	1.81	4.6	32.1	13⅜– 2⅞
(a) Splentex[5]	7¼	19.5	0.60	0.20	0.24	12.1	12.56	1.73	3.3	28.9	19¾– 3½
Springs Mills	17¼	906.1	3.58	0.58	0.99	4.8	38.60	2.24	7.0	1.5	20⅞– 8¼
JP Stevens	14	1,915.9	1.59	d0.34	1.09	8.8	36.55	2.61	8.6	–9.7	18¾– 8¼
Ti-Caro	28⅞	251.0	5.75	1.25	1.43	5.0	36.72	1.27	7.6	5.0	29⅞– 6¼ [4]
(o) Unitog	13	56.6	3.20	0.96	0.76	4.1	29.80	2.29	6.2	—	50½– 8¾ [4]
West Point-Pepperell	43⅜	1,241.6	9.67	2.62	2.27	4.5	69.71	1.60	7.3	10.1	45¾–16¼
(o) William E Wright	5	44.4	0.59	0.12	0.06	8.5	9.32	1.86	5.6	25.0	26¼– 1¾

[1]All companies listed on the New York Stock Exchange except those labeled (a), American Stock Exchange and (o), over-the-counter exchange. [2]This column shows the percentage increase or decrease in stock price since the Sept. 1, 1980 issue of FORBES. [3]Already 40% owned by Amoskeag; now discussing a total combination with this company. [4]Price range for less than 11 years. [5]To be merged into a private company, Splendor Form International. Each public shareholder is to receive $8 for each share surrendered. d: deficit.

With its extremely secure balance sheet and its freedom from long-term debt, Cannon is still in a good position to be either an acquirer or an acquiree. Further plays seem likely.

Another courtship that apparently won't make it to the altar is Allegheny Ludlum Industries' seemingly halfhearted flirtation with Blue Bell. Kay Norwood, analyst at Interstate Securities of Charlotte, N.C., sees the venture as somewhat of a mismatch right from the start. The joke going around was that perhaps Allegheny had plans to use some of their excess steel capacity to make jeans out of something a little sturdier than denim. Besides, Norwood notes, Blue Bell is worth closer to $50 to $60 a share than the $40 offered by Allegheny. Now Bass Brothers Enterprises, a private oil and gas company that controls 6.8% of Blue Bell, has emerged as another potential suitor.

Then there's Fieldcrest Mills, which is considering a combination with Amoskeag, which already has a 40% interest in Fieldcrest. Splentex, meanwhile, is going private *(see table)*.

The list goes on: Hart Schaffner & Marx strengthened its position in women's tailored clothing, one of the stronger growth areas in this industry (FORBES, *Feb. 16*), by acquiring Country Miss.

Troubled Munsingwear is attempting to issue over half a million shares, the equivalent of 30% equity, and sell them to three Japanese companies. A Munsingwear shareholder group represented by Tweedy, Browne *(see following story)* is challenging this plan. Warming up in the bullpen is Gulf & Western, which holds 16% of Munsingwear.

If the market can't recognize a bargain staring it in the face, Charles Bluhdorn, chairman of Gulf & Western Industries, usually can. In November Oxford Industries bought back 6% of its common from G&W, who made about $2.5 million on that deal. Cannon Mills and West Point-Pepperell have also paid premiums to buy back shares from Mr. Bluhdorn.

One reason that people like Charles Bluhdorn see many of these stocks as promising investments is that they're selling way below book value. For every buck you invest in Avondale Mills, for example, you get $2.43 worth of book value assets.

"Book value can represent obsolete plant and equipment with little market value," cautions Kay Norwood. "Liquidate some of these companies and you'd only get about half book for their assets." But in textiles and apparel some productive assets were written off ages ago. Besides, many companies, Cone Mills, for example, have been making major capital investments.

In short, the bargains FORBES wrote about last September are still there. But now people are beginning to notice. ■

Clever Tweedy, Browne doesn't date the most glamorous gal in town. It looks for wallflowers that have very rich daddies.

Finding money in The Street

By William Baldwin

WANNA HOT STOCK TIP? Tweedy, Browne Inc., a broker and investment adviser, recommends Simpson Timber Co. at $40,000 a share. Earnings are a respectable $12,000 or so, giving an attractive multiple, but the folks at Tweedy couldn't care less about the earnings. What they see is an estimated 60 acres per share of redwoods and 75 acres of other timberland, making the stock worth 10 or 20 times the quoted price.

Tweedy, Browne is a dealer in inactive securities like Simpson and an avid buyer of any stock available for a fraction of its intrinsic value. "If you can find a dollar bill for a nickel it makes sense to buy it," says Thomas Knapp, 60, who oversees the slow-paced, almost sleepy trading room in Tweedy's 17th-floor offices at 67 Wall Street. Knapp and the four other contented millionaires who run the firm make handsome if unspectacular profits in the low-risk business of asset plays.

TBK Partners, the firm's main investment vehicle, has earned 22% a year compounded since January 1959, compared with 8% for the Standard & Poor's 500, including dividends. Besides what they make on their own $6 million piece of TBK's $35 million in capital, Knapp and his colleagues take a fifth of each year's profits off the top as general partners, leaving a still attractive 16% to 18% for the 60 limited partners. They also collect a 1.5% annual fee for investing another $60 million in individual accounts.

These vulture capitalists don't want to hear about a company's bright prospects, clever management or new products, only how much meat is on the bones. Manufacturers, for example, selling for two-thirds of their cash and inventories. Or timberland, television stations or motels going for one-third of appraised value. SEC filings show that TBK and affiliated accounts own 5% or more of a girdlemaker (Splentex), a publisher of religious books (Sadlier) and two ladies' handbag firms (Consolidated Accessories and Olla Industries). Hardly glamorous. "We don't want to value the what-if part of the business. We want to value the what-is," says Christopher Browne, 34, son of an early partner.

Tweedy, Browne began 61 years ago as a mail-order business of Forest Burwell Tweedy, an eccentric Dickensian character who attended annual meetings of obscure companies, copying down shareholder lists and mailing postcard offers to buy or sell small batches of stock. But there's more money in investing than in trading. If you can buy something for $5, why sell tomorrow at $6 when it's really worth $25? Today Tweedy, Browne is a marketmaker in 20 stocks and an investor in 900. Holdings range from a single share of Standard Safe Deposit Co., around the corner on Broad Street, to controlling interest in an insurance company (bought for a fraction of its stock portfolio), a casketmaker (a current-assets play) and a dredging company (which sits on several miles of Delaware River waterfront). "We'll buy anything at a price," says Chris Browne.

The best opportunities are in thinly traded securities, but they're also the hardest buys to find and the hardest to assess. Take Simpson Timber, largely owned by the billionaire Reed family of Seattle. Management doesn't cotton to outside shareholders, and it's closemouthed about finances, to say the least. The one-page 1979 annual report doesn't bother with such details as the number of shares outstanding, which makes valuation tricky. This is not such an unusual situation. Of 15,000 companies listed in the National Stock Summary, nearly half have fewer than 500 shareholders and thus don't file financial data with the SEC. Offered a few shares of some unknown, nonfiling company, Browne says, "We'll go through the Dun & Bradstreet listing and throw in a real low ball."